

Unit 10

Day 4

Odds & Ends

Section 2.7 of textbook

## QUICK QUIZ:

NAME:

DATE:

PERIOD:

Solve. Write solution set in interval notation and graph.

$$2k^2 - 9k > -4$$

$$\textcircled{11} \quad 9x^3 - 12x^2 \geq x$$

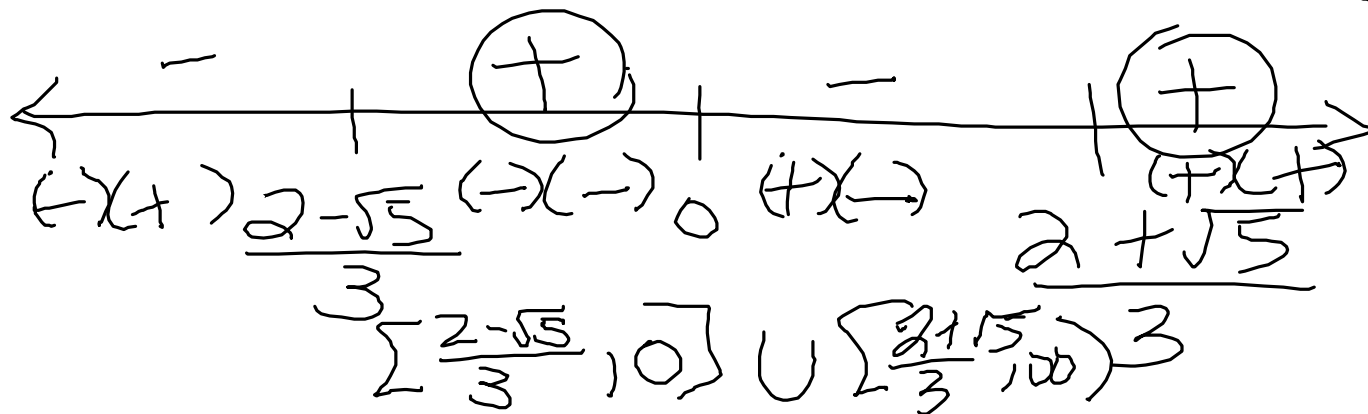
$$9x^3 - 12x^2 - x \geq 0$$

$$x(9x^2 - 12x - 1) \geq 0$$

$$x = \frac{12 \pm \sqrt{144 - 4(9)(-1)}}{18} = \frac{12 \pm \sqrt{144 + 36}}{18}$$

$$= \frac{12 \pm \sqrt{180}}{18} = \frac{12 \pm 6\sqrt{5}}{18} = \frac{2 \pm \sqrt{5}}{3}$$

$$CV \quad 0, \frac{2-\sqrt{5}}{3}, \frac{2+\sqrt{5}}{3}$$



Use the discriminant to find the value(s) of  $k$  such that the given quadratic will have only real solutions.

1)  $x^2 + kx + 3 = 0$

$$a = 1$$

$$b = k$$

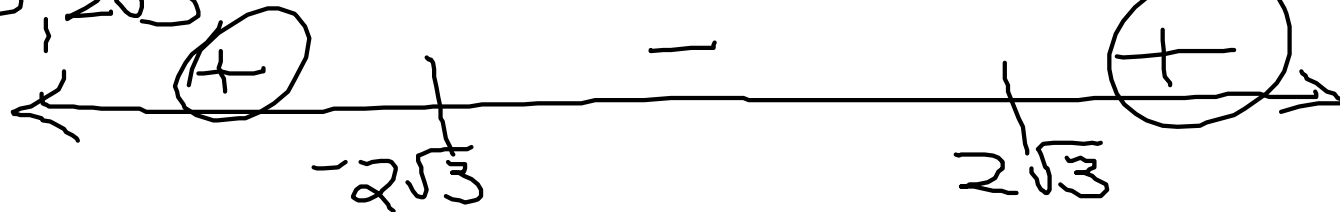
$$c = 3$$

$$b^2 - 4ac \geq 0$$

$$k^2 - 4(1)(3) \geq 0$$

$$k^2 - 12 \geq 0 \quad (-\infty, -2\sqrt{3}] \cup [2\sqrt{3}, \infty)$$

$$CV \quad -2\sqrt{3}, 2\sqrt{3}$$



Use the discriminant to find the value(s) of  $k$  such that the given quadratic will have only real solutions.

2)  $kx^2 + 8x + k = 0$

$$b^2 - 4ac \geq 0$$

$$8^2 - 4(k)(k) \geq 0$$

$$64 - 4k^2 \geq 0$$

$$(8 - 2k)(8 + 2k) \geq 0$$

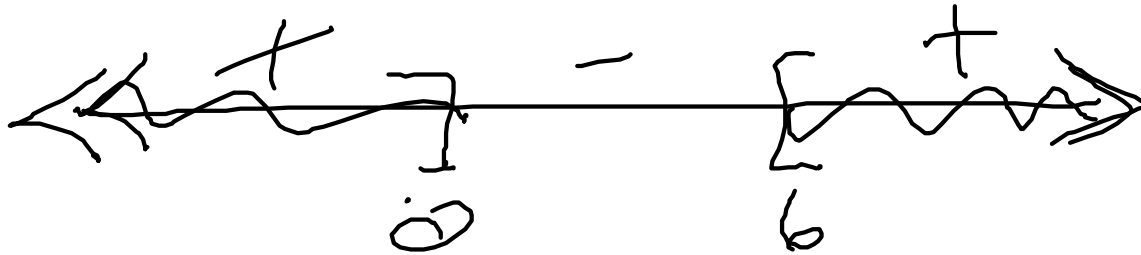
CV  $4, -4$

$$[-4, 4]$$



3) Find a quadratic inequality with the following solution.

$$(-\infty, 2] \cup [6, \infty)$$



$$(x-2)(x-6) \geq 0$$

$$x^2 - 8x + 12 \geq 0$$

4) Find a rational inequality with the following solution.

$[-3, 2)$



$$\frac{x+3}{x-2} \leq 0$$

5) The cost (c) to produce x chocolate bars is  $c = 1.25x + 5000$ ; the revenue (r) is  $r = 1.5x$ . Find all of the values of the chocolate bars that must be produced to at least break even.

$$\text{Revenue} \geq \text{Cost}$$

NOTE: In order for a company to "break even", their revenues must equal or exceed their costs.



HW pg 147-148 25,26,60,61,71-78 all & Extra problems

Extra problems:

Use the discriminant to find the value(s) of  $k$  such that the given quadratic will have only real solutions.

1)  $x^2 - kx + 8 = 0$

2)  $x^2 + kx - 5 = 0$

3)  $x^2 + kx + 2k = 0$

4)  $kx^2 + 4x + k = 0$